JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

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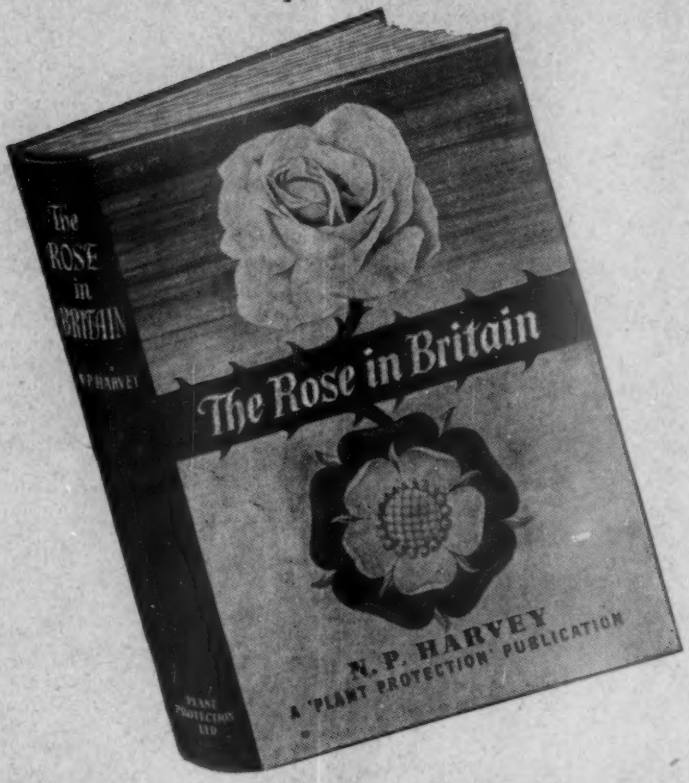

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NOTICE TO BINDER

Volume LXXVI has been issued in twelve parts, consisting of the "Journal" proper, paged with Arabic figures, and "Extracts from the Proceedings," paged with Roman figures, in Parts I–II. *The title and contents should be placed first, and be followed by the twelve parts of the "Journal" proper, with the illustrations in the centre in each case, and then the eleven parts of the "Extracts from the Proceedings."*

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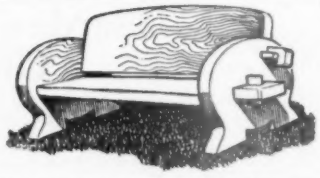

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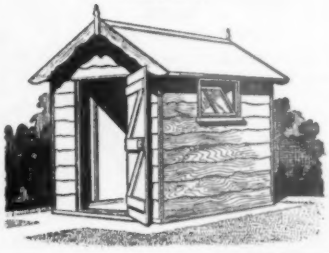

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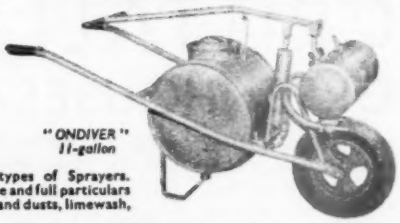

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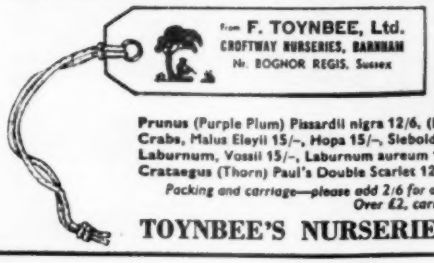

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JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

Vol. LXXVI Part 12

December 1951

THE SECRETARY'S PAGE

ANNOUNCEMENTS—DECEMBER AND JANUARY

Shows

TUESDAY, December 4 12 NOON to 6 P.M. WEDNESDAY, December 5 10 A.M. to 5 P.M.	Fortnightly Show. Late Apple and Pear Competition.
TUESDAY, January 29 12 NOON to 6 P.M. WEDNESDAY, January 30 10 A.M. to 5 P.M.	Fortnightly Show.

Lectures

TUESDAY, December 4 at 3 P.M. "Viburnums" by MR. F. E. W. HANGER.
TUESDAY, January 29 at 3 P.M. "Plant Names" by MR. J. S. L. GILMOUR, M.A., F.L.S.

A programme of lectures is being arranged for 1952 and the subjects and dates will be announced in the JOURNAL.

Annual General Meeting—The Annual General Meeting to receive the Report of the Council for 1951 and a statement of accounts for that year will be held on Tuesday, February 26, 1952, at 3 P.M. There will also be a show on that and the following day.

Orchid and Fruit and Vegetable Committees—If necessary the Fruit and Vegetable Committee and the Orchid Committee will meet on January 8, 1952. Persons who wish to submit novelties to to these Committees on that date must inform the Secretary before January 1, 1952.

Examinations, 1951—At the Final Examination for Teachers of School Gardening there were twenty-seven candidates of whom seven obtained the certificate, as follows:—

MR. F. A. BAKEWELL
MR. F. W. BRASSINGTON
MISS W. M. FRYER
MR. J. HUGHES
MR. R. A. SCOPES
MR. W. C. TEAGUE
MR. J. D. WOOD

The Society's Examinations in 1952—Candidates who wish to enter for the Society's Examinations in Horticulture in 1952 are reminded that the closing dates for entries are as follows:—

General Examination in Horticulture, and General Examination in Horticulture for Juniors—Monday, January 14, 1952.

Examinations for the National Diploma in Horticulture (Intermediate, Final, and N.D.H. Honours)—Friday, February 1, 1952.

Examinations for the Teachers' Diploma in School Gardening (Intermediate and Final)—Friday, February 1, 1952.

Wisley Trials—The Royal Horticultural Society will carry out during the coming season the following trials:

Vegetables

Broad Beans, 1 pint of seed of each variety to be received at Wisley not later than December 31, 1951.

Turnips (excluding frame varieties) 1 oz. of seed of each variety.
Celery (not self-blanching), ¼ oz. of seed of each variety.
} Entries to be received at Wisley not later than January 31, 1952.

Flowers

Aubrietas from seed, 1 packet of seed of each variety to sow 60-foot run, to be received at Wisley not later than March 31, 1952.

Aubrietas as plants, 6 plants of each variety to be received at Wisley not later than September 30, 1952.

Campanula persicifolia
Auriculas, Alpine
} 1 packet of seed of each variety sufficient to produce 60 plants, to be received at Wisley not later than March 31, 1952.

Regal Pelargoniums, 3 small plants of each variety to be received at Wisley not later than April 30, 1952.

Plants and Seeds for Invited Trials

Except where a variety has been selected for trial, a fee of 10*s*. will be charged for each entry accepted for trial. No firm or person may send more than ten varieties.

Anyone desiring to send a variety or strain to an invited trial must obtain from the Director of the Gardens an entry form which must be completed and returned by a specified date. Except where plants are called for, the entrant must certify on the form either,

(*a*) that the variety or strain has been raised or developed by him

or (*b*) that the variety or strain was, or is about to be, introduced by him to British commerce.

The entrant must also supply sufficient particulars of the history of the variety or strain to substantiate his certificate, but such particulars will not be published by the Society without the sender's consent.

Entries should be addressed to The Director, The Royal Horticultural Society's Gardens, Wisley, Ripley, Woking, Surrey (goods via Horsley Station, S. Reg.), and should reach him not later than the dates specified above.

WISLEY IN DECEMBER

At this time of year readers may like to hear something about the history and cultivation of some of the plants associated with the Christmas festivities, plants such as Holly, Ivy, Mistletoe, Yew and other evergreens which are useful for decoration, and, of course, the Christmas tree itself. Many of these are growing in the Gardens, and on a crisp sunny day, perhaps with a slight powdering of snow on the ground, there is no more pleasant walk than that through the Pinetum where shapely conifers of many forms and of varying greens are planted on every side.

We cannot trace how far back the Christmas tree custom goes, but it is probably of very ancient origin indeed, and possibly a survival from the Scandinavian mythology that preceded Christian times. In England and most European countries *Picea Abies*, the Norway Spruce, is favoured. In America many different conifers are used, in some parts the Balsam Fir being considered best while in places where Firs and Spruces are not available, Pines are not despised. *Picea Abies* is too well known to require description here. It has a wide distribution throughout the mountainous regions of central Europe. Originally *Pinus sylvestris* was the common conifer indigenous to Norway, remains of it being found everywhere in the peat mosses. The Spruce on the other hand is a comparatively late emigrant from Sweden and Lapland. Although today it is not a native of Britain, remains of it have been found in pre-glacial beds in parts of Norfolk and it appears to have been re-introduced early in the sixteenth century. As has been mentioned already, in parts of America the Balsam Fir, *Abies balsamea*, is regarded as having all the characteristics of a perfect Christmas tree, a good habit and fragrant needles which persist indoors longer than most others. Although it was introduced into England by BISHOP COMPTON as long ago as 1698 it is seldom grown in this country and even in its natural American habitat it is short-lived. Canada balsam, an oleo-resin used for mounting microscopic specimens, is obtained from blisters on the bark.

On the left of the path through the Pinetum is a well-shaped specimen of *Picea orientalis*, the Caucasian Spruce. It is one of the most useful conifers in cultivation and being similar to *P. Abies*, but with shorter leaves, it makes an admirable Christmas tree. There are also to be seen specimens of the Spanish Fir, *Abies Pinsapo*, which was discovered in 1837 by EDMOND BOISSIER, who sent half a dozen seeds to the firm of M. DE VILMORIN, where one plant was raised. It was

introduced into England two years later by CAPTAIN WIDDRINGTON. The glaucous-leafed variety, even on chalk, makes a particularly fine specimen tree, retaining its lower branches for many years.

There are a great many legends and superstitions surrounding the use of Holly at Christmastide. Some people ascribe its early use to the Druids though it is quite likely to have been a custom brought over by the Romans to whom the plant was known as *Aquifolium*. The first written record of its use for Christmas decoration was in the time of HENRY VI, when a carol was composed about it. The common name Holly is of long usage and probably is derived from the word Holy, for in Germany it is called Christdorn, legend saying that it was used to form the "Crown of Thorns."

There are numerous varieties of *Ilex Aquifolium* varying in size, shape and colour. There is a good specimen of *I.A. camelliaefolia* in the Award of Garden Merit Collection. It has fine dark green leaves, often entirely without spines, and bears pistillate flowers only. Thus a pollen-bearing plant must be planted nearby for the scarlet fruits to be produced.

In ancient times Yew was much in evidence on Palm Sunday, having melancholy rather than festive associations. Now it is used frequently either in conjunction with holly or in the making of garlands at Christmastime. Varieties of dense habit are best for this purpose, a good one being *Taxus baccata neidpathensis*, several plants of which are to be seen in the Pinetum on the right of the main path.

Ivy is often seen in garlands at Christmas. After enjoying a tremendous vogue in the nineteenth century, it has seldom been planted in recent years although it is now becoming increasingly popular as a room plant, a fashion which has spread rapidly from the Scandinavian countries.

Viscum album, the Mistletoe, is a semi-parasitic plant which derives its nutriment and water from the sap of the host plant, but unlike most parasites has evergreen leaves containing chlorophyll.

Its cultivation is simple, but it takes some time to become established. The seeds, when placed on a branch of a suitable tree, germinate in the spring, the base of the hypocotyl lengthening and attaching itself to the bark by means of an adhesive disc. In the following spring a peg-like sucker grows from the centre of the disc through the cortex of the tree as far as the "wood" cells, where it forms a network of haustoria. The first two leaves also appear in the second year and the true leaves in the third season of growth. Apples, Poplars and Hawthorns are some of the hosts the parasite most favours but it has been established on a great variety of plants. Actually there are three distinct races of *Viscum album* which, although practically identical morphologically, require different host plants. The first grows on one or two closely related species of Pine and Larch and cannot be established on deciduous trees. The second occurs on the Silver Fir and can only be transferred to some other species of Abies, while the third has various sub-races each having more or less sharply marked preferences for certain broad-leaved trees. These facts should be borne in mind when attempting to establish the plant.

MASTERS MEMORIAL LECTURES, 1951

FRUIT VARIETIES AND PRODUCTION IN MASTERS' TIMES CONTRASTED WITH MODERN KINDS AND METHODS

H. V. Taylor, C.B.E., D.Sc., A.R.C.S., V.M.H.

PART II

THE methods used for producing fruit in the Victorian era are well shown in the gardens and orchards of the period and for confirmation we can turn to the many gardening books of the time.

In the gardens the fruit plantings seem to have followed a definite pattern for there were :

(1) Wall trees;
(2) Espaliers for the borders;
(3) Standards for the compartments.

Wall Trees—The best walls (S., S.E. & S.W.) were allotted to the Vines, Peaches, Nectarines, Figs and Apricots.

The Cherries in general had an exposure looking to any point of the compass, except full north. The Morello Cherry, the Pear, the Plum and the Apple were planted on any available wall.

It is said that the trees to be planted against the wall were either dwarfs or riders, the dwarfs being the permanent trees and the riders merely temporary plants. It is said to have been the practice to plant trained trees, *i.e.* trees that may be five or six years old. These trees would be planted from 18 feet to 20 feet apart and so in the early years there is ample wall space between for the "riders" which very often were dwarf Cherries, cordon Gooseberries or Currants.

Espaliers and dwarf standard—The espaliers were planted in the vegetable borders alongside the paths and so formed a boundary to the vegetable borders and to some extent hid the vegetables and so improved the general appearance of the garden. The espaliers are said to have been grafted on to dwarfing stock such as Paradise, creeping Apple or Doucin stocks.

Standards—Though generally confined to the orchards, were commonly found in the kitchen gardens as well.

The Victorian gardeners were great believers in good cultivation of soil, for as one writer puts it "The Ground should never lie long without stirring, for the soil should be in a free, sweet and rich state, by proper digging. It should be free that the roots may not be impeded in the quest for food, sweet that the food may be wholesome, and rich that there may be no defect of nutriment." It was thought necessary to have a depth of soil from twenty-four to thirty-six inches and this was achieved by trenching three spits deep, every third year, and always before planting trees.

If the original soil is poor, it was given dressings of dung every year otherwise it was a sort of rule with gardeners that the ground should be dunged every second year. The dung too had to be well rotted for there was a general belief that if the manure had not undergone a proper fermentation the effect was to give a rank and disagreeable flavour to the fruits. In addition to the usual farmyard dung, there was also used sea-weed, pigeon manure, soot and ashes.

Commercial Orchards—In this paper we are not concerned with the neglected grass orchards which produced occasional fruit crops for sale, but with the fruit plantations of the specialist fruit growers—who followed practices not differing widely from those described for the garden fruits.

The thickly planted orchards were dug by hand and it is incredible how quickly this could be done by practised hands. This hand digging was commonly done through the Victorian era and indeed I saw it done in some orchards in Kent in 1912.

Pests of Fruit—The gardening books of the Victorian era have not much to tell us concerning pests of fruit and the little information to be found reads strange in these days when we imagine we know so much on this subject. ANDREW KNIGHT for instance observed " that moss injured trees in gardens. It appears to constitute a symptomatic rather than a primary disease in fruit trees; it is often brought on by damp and uncultivated soil, and by the want of air and light in closely planted orchards. In these cases it can be destroyed by removing the cause to which it owes its existence." LOUDON—the celebrated gardener—writes on Blights "Whatever deranges and destroys the organization of the blossoming and prevents the setting of the fruit is in general termed a blight; whether produced by insects, parasitical plants; or an excess of heat or cold, draught or moisture. One of the most injurious insects with which the Apple-tree has been visited for the last twenty years is the woolly aphis. Thorough cleansing with a brush and water is the only means of destroying the insect. The caterpillars of many species of butterfly and moth, and the larvae of various other genera attack fruit trees and cause injurious effects. Burning straw or other material under the trees has long been recommended; but the principal thing to be relied on is proper cultivation *i.e.* judicious sub-soil and surface soil culture and pruning."

This has been written to show that our ancestors spent much time on tree training to cordons, espaliers, etc., and carried out an elaborate system of pruning, but above all paid great attention to the soil which was hand-dug, occasionally trenched two spits deep, and liberally supplied with dung and other waste organic material. Since those times we have deemed some other things to be of more importance and often spend more time on these than on cultivation.

Stocks—Let us for a moment consider stocks for fruit trees. As previously mentioned, our ancestors for Apple trees preferred the Seedling Crab. "A preference" KNIGHT observes "has generally and justly been given to Apple stocks raised from seed of the native kind *i.e.* the wild Crab as being more hardy and durable than those produced from other kinds." It was believed that the dwarf cordons and espalier

trees should be worked on Paradise. LOUDON writes "Paradise, or as they are called by the French Doucin stocks." We had to await the work of HATTON to show us that the term Paradise was applied to a number of stocks some of which were indeed vigorous and not dwarfing. Instead of being one thing HATTON found a large number (over 20) of stocks all called Paradise and often mixed together in the nursery. Each type as recognized by botanical characters was isolated by HATTON and multiplied separately and given a number—thus, Type I was the Broadleaf Paradise. Type II the Doucin. Type IX the Jaune de Metz, etc. Many of the other stocks to which numbers were attached proved to have undesirable characters and have been discarded. This careful work gave the present fruit growers and nurserymen for the first time true line stocks meaning that all the members of Type I were identical and true Broadleaf Paradise, etc.

In the early years of this work it was thought that the Type IX, Type II induced dwarfing habits in the Apple trees worked on these roots and that others—Type I for instance—gave vigorous growth, but of course no hard-and-fast doctrine could be laid down until the trees had been grown for a sufficient length of time and the results observed. At present the prevailing view is that Jaune de Metz (M. IX) is a very dwarfing stock. All varieties that have been worked on this stock have been dwarfed and brought into cropping early. Such trees at 25 years old show no evidence of wearing out. It is an excellent stock for trees in small gardens and indeed even in commercial orchards where production by intensive means is carried out.

The research workers at the East Malling Research Station are no longer satisfied that the Doucin (M. II) rootstock is semi-dwarfing, for time has shown that the trees on this stock develop into large bushes. For this reason it is now looked upon as a vigorous stock though the nursery trade use it largely for bush trees for which it is suitable. The only semi-dwarfing stocks are M. VII and M. IV and these have not been much used by nurserymen and there might be some difficulty to purchase trees on these. The very vigorous Paradise stocks M. XII and M. XVI are also available.

The present generation have much more information available of fruit tree stocks. Nurserymen are using the classified E. Malling stocks and fruit growers are concerned to get the tree on the particular stock according to their requirements. On M. IX for small trees for the garden. On M. II for bush trees and on the very vigorous for the large standards. Similar work has been done on isolating suitable stocks for Pears, Plums, Peaches, etc. The result is that the present race of fruit growers have become "Stock" conscious and nurserymen include in their catalogues notes to indicate the stock used for each variety. This is a great help.

In our ancestors' time the vigour of growth was an unknown factor, now we have stocks that provide just the tree growth needed and planning is now certain.

The outcome of this research work by HATTON and his fellow workers has been applied to practice throughout the world and has helped fruit growers in planning their orchards.

Blossom Pollination and Fertilization—One can imagine from the writings in the gardening books of the Victorian era that the gardeners and fruit growers were aware that fertilization of the blossoms was a necessary prelude to fruit production for bees were kept near or in the gardens and recommendations were commonly made to place the beehives amongst the fruit in the orchards. There is no mention of the planting of varieties especially for pollination purposes and it may well be that little was known of this important feature: indeed as so many varieties were grown the blossoms became cross pollinated and no loss was suffered despite the lack of knowledge.

Later on when the varieties were limited in number, the problem loomed larger and it became an urgent one when the sterile Cox's Orange Pippin and the Bramley's Seedling (with its bad pollen grains) came to dominate the orchards. Bees were still important but pollinator varieties had to be planted to make the Cox's Orange and the Bramley's Seedling really productive of a sizeable yield of shapely fruits. Much research work was necessary however to unravel the mystery and provide the information necessary for a working basis. Much of the fundamental work for the British varieties has been done by CRANE of the John Innes Horticultural Institution to whom fruit growers and indeed the whole country are much indebted for his brilliant work and productive results. He has shown that Apples fall into two classes: (a) the diploids—which have 34 chromosomes (*i.e.* 2 × 17)—and this embraces most varieties known. In the fertilization, formation and development of the fruit the diploid Apples follow the simple rule. As a result they often have a high percentage of good pollen and so are generally fertile. (b) The triploids having 51 chromosomes (*i.e.* 3 × 17) and these present a difficulty as 51 cannot be divided into two parts equally, so that irregularities and sterility occur. Indeed much of the pollen of the triploids 'Blenheim Orange,' 'Ribston Pippin,' 'Bramley's Seedling,' 'Reinette de Canada,' 'Belle de Boskoop,' 'Warner's King,' is bad and if these varieties are planted in isolation they would develop a poor crop. By patient research work CRANE and others have shown that some Apples are quite self-fertile to their own pollen, others partially so, and a third group sterile to their own pollen; yet even the varieties that give a moderate set with their own pollen, give better and more regular crops and fruit of better shape when cross-pollinated. So much is the present generation convinced that pollinators are now provided for main sorts—indeed a whole technique has been developed for the correct placing of the pollinator trees in relation to the other trees in the gardens and orchards.

For 'Cox's Orange Pippin' a good pollinator is either 'James Grieve' or 'Lord Lambourne' as these come into flower at the same time as the 'Cox's Orange Pippin' and produce good pollen and do so in most years. As previously mentioned much of the pollen of the 'Bramley's Seedling' is bad and for this variety either 'Arthur Turner' or 'Grenadier' is a suitable pollinator since all are in flower at the same time and the pollen of these is good.

CRANE has also provided us with much knowledge on pollination as it affects the Pear, the Plum and the Cherry, with which fruits there

are deeper pollination problems than with the Apple. Indeed most varieties of Pears fail to set a crop with their own pollen and it is now usual to plant varieties of Pears together to effect cross pollination. 'Doyenné du Comice' with 'Laxton's Superb' or 'Glou Morceau.' 'William's Bon Chrétien' with 'Conference,' etc. For Plums, MR. M. B. CRANE, again by patient research work, has given lists of (a) Plums that are fertile to their own pollen, (b) Plums that are sterile or nearly so to their own pollen. We can plant any kind of Damson or cooking Plum and be satisfied that they are self-fertile but with good dessert kinds more care has to be taken. Dessert Plums need to be planted in a group or in pairs to provide conditions for successful pollination and fertilization. Suitable combinations would be 'Denniston's Superb' with 'Jefferson'; 'Coe's Golden Drop' with 'Bryanston Gage'; indeed it is now considered a good plan to plant near together a number of Plum varieties that come into flower at similar times. A suitable group would be 'Victoria,' 'Early Laxton,' 'River's Early Prolific' and 'Laxton's Gage,' and say a group comprising 'Marjorie's Seedling,' 'Delicious' and 'Cambridge Gage'.

MR. CRANE's research work has not only made the present generation conscious of the importance of planting pollinators to facilitate the fertilization processes; but it has provided most of the knowledge necessary to permit the application of the research results to practice. This knowledge is being applied to practice, and larger crops of the best Apples, Pears and Plums are now more commonly obtained. Indeed some varieties that were formerly labelled as poor croppers have ceased to be so regarded.

The Nutrition of the Fruit Tree—As previously mentioned the Victorian gardeners relied on dung—well rotted dung—to keep the soil fertile, and no doubt they experienced all the advantages and disadvantages of this substance for fruit production purposes. It probably produced excellent crops of soft fruits, but no doubt the tree growths were at times excessive and non-productive, and we know that leaf scorch was a very common complaint on the lighter soils of the country.

The present generation have no vast quantities of dung available and have to rely on other means of feeding the fruit trees and bushes, and so there has grown up a new technique known as the nutrition of fruit trees, a term not known to our ancestors.

Before this became possible much research was necessary and this was done at the Horticultural Research Station, Long Ashton, Bristol, and largely by DR. T. WALLACE.

In his experiments the fruit trees, bushes and Strawberry plants were grown in pots in pure sand. Some had complete nutrients added, some had none, whilst others had no potash or nitrogen or phosphorus, etc., as the case might be. Naturally the plants that were fed with complete nutrients grew well and free of trouble but when potash was omitted the trees, bushes, and plants showed leaf scorch; when starved of nitrogen the plants were stunted and made little growth. When other nutrients such as manganese, iron or magnesium were missing the plant growth was affected and the leaves showed "chlorotic" systems in varying degrees according to which nutrient was missing.

This very fundamental research work has established the basic nutrient requirements of most kinds of fruits and incidentally helped to the understanding of some of the problems that had puzzled our ancestors. Leaf scorch for instance was common in Victorian gardens and orchards, and no beneficial remedy was known—yet WALLACE's research shows that it was associated with soils deficient in potash, and indeed when the potash was added the leaves in time grew normally and without scorch. Such information soon spread amongst gardeners and fruit growers and now thousands of tons of potash are used in fruit growing—where our ancestors used very little. For some reason sulphate of potash seems the best form to use and a normal dressing for an Apple plantation would be 1 to 2 cwt. of sulphate of potash per acre, or in orchards having leaf scorch say 3 cwt. until the symptoms disappear. It would not be correct to say that leaf scorch is no longer a problem, it is and always will be, but research has shown how it can be dealt with successfully and so long as potash is made available to the fruit grower he has the means of dealing with it.

Fruits seem to vary in their requirements of potash. Apples and Black Currants seem most sensitive to potash deficiency and annual dressings as above are generally recommended; but Pears and Plums seem less sensitive. In potash deficient soils, where the trees show signs of potash deficiency, there is a good response to dressings of potash with better growth, greener leaves and heavier yield. On soils where the trees show no leaf-scorch the response to dressings of potash is not very definite.

This research also showed the varied nitrogen requirements of the fruits and the special nitrogen requirements of trees growing in grass.

The Plum, in common with the Black Currant for instance, needs much more nitrogen than do Apples. It is rather difficult however to generalize and this varies from orchard to orchard and also according to the variety. 2 to 5 cwt. of sulphate of ammonia per annum seems a suitable dressing though cooking Apples need more and dessert Apples rather less. The Cox's Orange Pippin however may lose some of its aromatic scent and spicy flavour if the nitrogen is low and so for this variety the nitrogen dressings are generous. So great is the change since Victorian times that farmyard manure for Apples and Pears is no longer in favour, because it promotes excessive vigour, delays the ripening of the wood and adversely affects fruit quality. For all soft fruit it still seems superior to the inorganics probably because of its beneficial physical action on the soil.

The Long Ashton results have shown that fruit trees, bushes and plants have a greater need of manganese than was formerly recognized. In the past chlorotic leaves were rightly associated with an absence of iron induced in calcareous soils; but the Long Ashton research shows that the lime can also lock up the manganese and cause an inter-veinal chlorotic condition. In fact maganese deficiency is apparent in very many trees and bushes. In gardens where manganese is deficient a spray containing 3 lb. manganese sulphate to 100 gals. of water at blossom time is the usual remedy used. Where magnesium is deficient

Photo, J. E. Downward

SOME LESS COMMON HERBACEOUS PLANTS

FIG. 192—Nerine × 'Hera' (See p. 440)

SOME LESS COMMON HERBACEOUS PLANTS

FIG. 193—*Nerine Bowdeni* 'Fenwick's variety' (See p. 440)

Photos, W. Abbing

SOME LESS COMMON HERBACEOUS PLANTS

FIG. 194—*Cynara Cardunculus*, the Cardoon (See p. 438)

FIG. 195—*Cynara Scolymus*, the globe artichoke (See p. 438)

Photo, Malby

SOME LESS COMMON HERBACEOUS PLANTS

FIG. 196—*Chicorium intybus* (See p. 439)

SOME LESS COMMON HERBACEOUS PLANTS

FIG. 197—*Dierama pulcherrimum* (From the *Botanical Magazine*, t. 5555)

(See p. 440)

FIG. 198—*Shortia* × *intertexta* 'Wimborne' **A.M.** April 17, 1951. Shown by Mr. W. J. Marchant, Wimborne, Dorset (See p. 443)

Photo, J. E. Downward

FIG. 199—*Cyclamen Rohlfsianum* **A.M.** September 11, 1951. Shown by Messrs. W. E. Th. Ingwersen, East Grinstead (See p. 443)

Photo, J. E. Downward

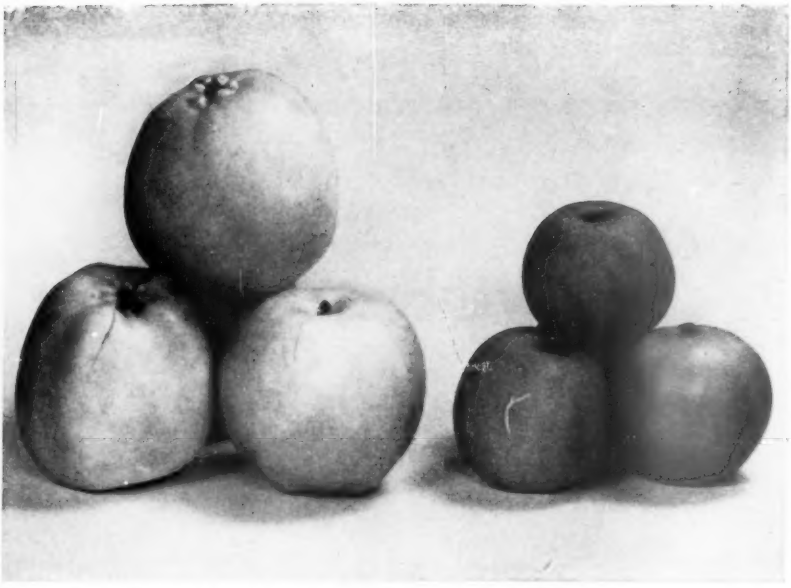
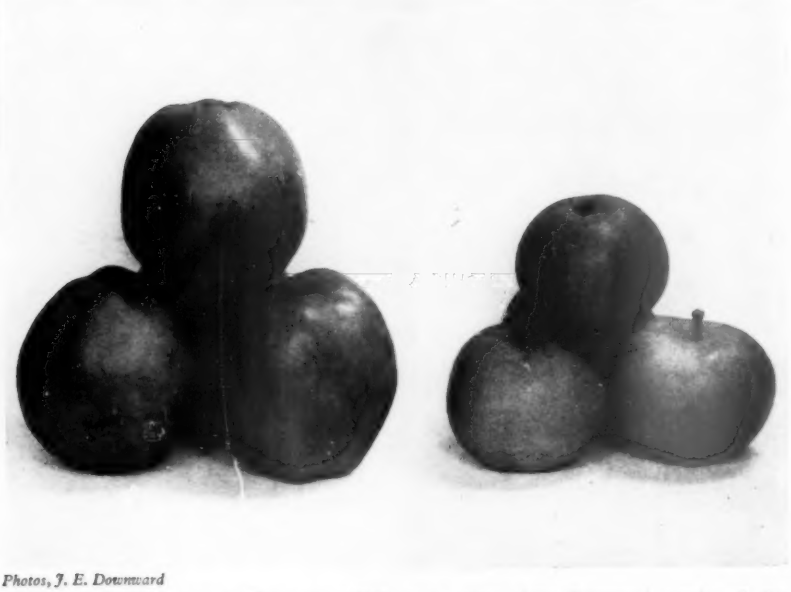


FIG. 200—(Left) Apple 'Keswick Codlin.' The most popular "Early Cooker" during the eighteenth century.

(Right) Apple 'Golden Pippin' was widely grown and favoured during the seventeenth and eighteenth centuries.

MASTERS MEMORIAL LECTURES, 1951

"Fruit Varieties and Production in Masters' Times contrasted with Modern Kinds and Methods."



Photos, J. E. Downward

FIG. 201—(Left) Apple 'Cornish Gilliflower.' The best flavoured apple of the Victorian era

(Right) Apple 'Old Nonpareil' was widely grown and favoured during the seventeenth and eighteenth centuries.

dressings to the soil of Epsom salts (6 cwt. per acre) or magnesium limestone usually prove sufficient.

ROACH working at the East Malling Research Station has shown how the mineral deficiencies can be determined by leaf symptoms, and worked out a technique for supplying the minerals to the tree. For iron, boron, copper and zinc the correct procedure should be followed.

The story of nutrition has been told in this way to show that the present generation of fruit growers have a great faith in the merits of chemical dressings and the list of these chemicals increases annually. There is always a search to discover (and to add) the deficient element until leaf growth is large, green, luscious and most pleasing to the eye. This is a very different nutrition programme to that of our ancestors who relied on excellent cultivation coupled with dung, dung and more dung.

Pest Control Measure—Where ignorance is bliss it's folly to be wise, can I suppose, be written of our ancestors' attitude towards pest control —or perhaps the pests were not, in those days, trained to attack fruit trees as do the modern pests. ANDREW KNIGHT writes that moss injured the trees in gardens, but associated this with damp soil and suggested the cause be remedied. LOUDON thought woolly aphis to be the worst pest and suggested brushing with water. Burning straw under the trees was recommended for caterpillar—but writes, "the principal thing to be relied on is proper cultivation."

Towards the close of the century lime washing was practised when the trunks of the trees were coated with lime; this was put on with a brush and it certainly added to the appearance of the trees in the gardens and may have done some good also. Still later came the use of a lime wash sprayed over the whole tree and some growers used washing soda as an alternative. These measures had little effect on the pests, for THOMPSON'S *Gardener's Dictionary* published in 1904 records, " The devastation amongst fruit trees caused by insects and fungus pests has been serious during the last quarter of the century. The causes are various." By that time the syringe seems to have given way to knapsack machines fitted with spray nozzle and it is recorded that "a man with one of these machines strapped on his back can effectually spray hundreds of trees a day." Here was progress indeed.

We read "a winter dressing that has been strongly recommended by the authorities at the Wye Agricultural College, Kent, consists of 1 lb. of caustic soda, $\frac{3}{4}$ lb. carbonate of potash, and 10 oz. of soft soap to each 10 gallons of water."

The insecticide used was an emulsion of paraffin and soft soap or a quassia extract with soft soap. Paris Green was beginning to be used in the commercial orchard for the leaf-eating caterpillar.

It is recorded that "the only fungicide in general use on a large scale for fruit trees is the Bordeaux mixture."

These were the tools and chemicals at the service of the nineteenth century fruit growers and it is fairly obvious they must have fought a losing battle, for the modern fruit growers with better equipment can barely hold their own.

In this century there has been much research into both the spraying

machinery and the sprays. For the machinery engineers have developed a series of nozzles, swirl plates, discs, etc., quite unknown 30 years ago, and fitted the pumps to the petrol engine so that high pressures at the nozzle are now possible. The modern machines are mobile and can travel at fair speeds through the orchards and deliver 1,000 gallons per hour at pressures of 500 to 600 lb. at the nozzle.

Indeed the modern machines use so much liquid in so short a time that it is a difficult task to keep the machine supplied with water for diluting the chemicals to the correct strength. In consequence there has been devised a new type of machine—the air blast machine—in which a large volume of air is used to catch up and dilute the spray and to direct it on to the trees. Work on machine development is still proceeding.

Since MASTERS' day the few sprays then used have been forgotten and new ones taken their place.

For winter washes there are tar oil washes, dinitro-ortho-cresol or thiocyanide and one or two more in the experimental stage.

For the spring and summer sprays the quassia has quite disappeared and instead there are nicotine, derris D.D.T., benzene hexachloride, many phosphorous compounds as well as lime sulphur, sulphur in various forms and also mercury and copper compounds.

These were made available after extensive researches by chemists and pathologists had shown these chemicals to be effective against pests and safe to use on living plants. Research workers have shown too that the sprays are more efficient if other chemicals are added to make the sprays wet the leaves and spread over the whole surface, and in drying to stick to the leaves, and there are spreaders and wetters for this purpose.

The research chemists have discovered new chemical products that when sprayed on to plants are absorbed into the system of the plants and the plants become poisonous to insects that feed on them. Such chemical sprays are known as systemic sprays, and can be used for controlling insects on flowering plants and the like.

The chemists too have given the fruit grower the chemical—alpha-naphthalene acetic acid—which when sprayed on to the fruit stalks near harvest time inhibits the formation of the abscissional layer so that the fruit hangs on the tree longer and develop more colour.

Undoubtedly the modern fruit grower lives in a chemical age and he has great need of an understanding of this subject or to have at his beck and call a scientific member of the N.A.A.S.

This spraying has now become a complicated business and it must be regarded as an essential part of good orchard practice. The Bulletin of the Ministry of Agriculture for instance lists seven sprays for apples —The Dormant, Breaking, Green Cluster, Pink Bud, Petal Fall, Fruit Set and June Codling Spray, and many growers do in fact spray according to this programme. Many growers would also use the pre-harvest drop spray and so apply eight sprays to the Apples during the season.

Virus Diseases—There is no doubt that virus disease was present in some of the fruit trees and bushes in MASTERS' days but not to the same extent as at present when many stocks of Strawberries, Black Currants

and Raspberries have been ruined, and virus is said now to be spreading to Goosebeerries and Applies.

Indeed "virus" disease causes so much damage in so many plants that the present could be described as a "virus" age.

An understanding of the problem is far from complete but most scientists are now agreed that only "virus-free" stocks of fruits should be planted and chemical sprays applied to keep in check the insect vectors which carry the virus. Official schemes are in existence for inspecting and certifying "virus-free" stocks of some soft fruits, and this provides the present fruit growers with a service not available in MASTERS' time.

CONCLUSION

It seems that the Victorian gardeners spent as much time on fruit production as the present fruit growers but whereas our forebears concentrated on deep digging, thorough soil cultivation and applying dressings of dung to the soil, the modern fruit producers give attention to other matters, and particularly to the planting material. The planting stocks of soft fruits must be certified as free of virus and the trees be on selected root stocks of known performance. Deep digging and thorough soil cultivation seem less important to us but the modern growers do believe in the proper nutrition of the trees and bushes with chemicals, and above all the use of expensive power machines for pumping onto the trees and bushes at high pressure numerous complex chemical substances to keep pests and diseases in check.

If MAXWELL MASTERS is watching our proceedings this afternoon he would probably say "In my days we suffered from a lack of knowledge concerning tree growth and cropping was uncertain and unpredictable. It was therefore an excellent plan to have fruit production investigated by scientific research. The results from this have given you much knowledge of rootstocks, early cropping, fruit tree nutrition, successful blossom fertilization and pest control and the present generation should be better fruit growers than the past as I expect they are. I suggest you keep the research going for this abundant use of chemicals is disturbing and it may well be that the very chemicals now being used to overcome some problems may create new ones that only further research work can solve. It is wise therefore to be prepared."

SOME LESS COMMON HERBACEOUS PLANTS

Clarence Elliot

(*Lecture given on August* 28, 1951; MR. J. L. RUSSELL, *in the Chair*)

BEFORE discussing some of the less common herbaceous plants—the real subject of this talk—I would like to say a word or two about herbaceous borders, for it is there that they are mostly grown. The borders which have given me the greatest pleasure, and which have seemed to be the most interesting and beautiful, have been those which were *not* strictly and slavishly herbaceous throughout. True the majority of plants used were herbaceous, Phloxes, Delphiniums, Paeonies, Michaelmas Daisies and the rest, but these were supplemented with shrubby plants such as Rosemary and Lavender, Hypericums, Hardy Fuchsias and such bush Roses as the Musk Hybrids and the Chinas. One effect of a strictly all-herbaceous border, no matter how gorgeously colourful it may be at flowering time, is to give—to me at any rate—an uneasy feeling that when winter comes there will be a dreary waste of bare soil, broken only by the stubble of cut down Asters, Phloxes, Paeonies, etc.

Some of the finest examples of mixed, as opposed to purely herbaceous borders are to be seen in MAJOR LAWRENCE JOHNSTON'S garden at Hidcote Manor, near Chipping Campden in the Cotswolds. Here all sorts of permanent shrubby plants are grown among what might be called the summer visitors. The result is that, not only are the borders saved in summer from the sin and monotony of unbroken colour all the way and all the time, but when the colour pageant is over they still have beauty, interest and variety. Hidcote by the by now belongs to the National Trust, and is open to the public on Wednesdays, Saturdays and Sundays from 2 P.M. to 5 P.M. from March until November. At Hidcote many of the "less common" herbaceous plants will be found in the borders, some less common because they are rare in gardens, and some because they are not generally recognised as decorative flower-garden plants. In one wide border for instance are giant specimens of the Cardoon, *Cynara Cardunculus*, which is usually grown—if at all—in the kitchen garden (Fig. 194). The Cardoon is too big and tall for any but a big, wide border, growing as it does to a height of eight to ten feet, like some gigantic and supremely handsome Thistle, with silver-grey leaves, and huge blue Thistle flowers. Another magnificent plant for a big border is the Cardoon's near relation the globe artichoke, *C. Scolymus*, but only if you are not too conventionally minded, and can dismiss kitchen-garden associations from your mind (Fig. 195). And only if too you are strong-minded enough to resist the temptation of cutting the superb great blue Thistle flowers for table use! The globe artichoke, though not so tall as the Cardoon, nevertheless takes up a good deal of room in the border.

There is one other culinary herbaceous plant which is well worth translating from the kitchen garden to the herbaceous border—Chicory,

Chicorium intybus, a familiar British wild plant, found usually in chalky districts, and surely one of the most beautiful of all our wild flowers, with its branched wiry four-foot stems, and quantities of blossoms like Cornflowers of the clearest sky blue (Fig. 196). I have grown Chicory as a border plant, and I have also, in the past, planted out Chicory roots —after forcing them for salad—to take their chance in rough orchard grass. They took their chance with enchanting effect. Plant breeders having bred a race of Chicory with extra succulent leaves for salad purposes, should now breed for a race of Chicory even better adapted for the flower garden; a trifle more compact in habit perhaps, and even more, floriferous than the wild type—but always, please, of the same lovely sky blue. This surely is a promising field for experiment, and success—well—men have been given peerages for less! Meanwhile, I recommend planting Chicory, unaltered and unimproved, several together in a group for the best effect. One more culinary plant and I have done with robbing the kitchen garden to embellish the herbaceous border. I once saw at the very front of a fine mixed flower border what looked, at a distance, like wide clumps or mats of thrift of an unusual colour. Instead of being the usual pink or crimson of the sea pink, they were a subtle tone of reddish mauve. It was only at close range that I discovered what they were—Chives in full flower. In the kitchen garden, and the herb garden, the flowering of Chives is rather frowned upon. As a front-edge flower in the herbaceous border they are delightful. Even more effective is a larger, taller variety of the Chive which I collected in high Alpine pasture two years ago at the Col de Lautaret in the Dauphiné Alps. This has larger flower-heads of the same colour, carried on eighteen inch stems.

One of the most beautiful of all the Alliums, and one of the most neglected, is *Allium coeruleum*, which has spherical cornflower-blue flower-heads, about the size of ping-pong balls, carried on wiry two-foot stems. The bulbs of this very beautiful species I am glad to say are relatively inexpensive to buy.

How seldom one sees the charming little hardy Agapanthus known generally as *Mooreanus*. This name covers a race of dwarf hybrids, which are in effect miniature two-foot editions of the handsome blue 'African Lily,' *Agapanthus orientalis*, more commonly known as *A. umbellatus*. This is the one which folk grow in tubs, store indoors during the winter, and stand out to flower on the terrace in summer. Why, I, wonder is the smaller *A. Mooreanus* so seldom grown. It has been in cultivation for a great many years—over seventy I believe—and is absolutely hardy. It may be readily increased by division in spring, and not only flowers freely, but sets seed, and is easily raised from seed. An even finer hardy Agapanthus than *Mooreanus* is *A. intermedius* another hybrid. I have known it for many years, growing in open borders at Abbotswood in the Cotswolds. The leaves are broader than those of *A. Mooreanus*, and the stouter, two-foot stems carry larger heads of larger flowers of a deeper, richer blue. Unfortunately *A. intermedius* appears to be a rarer plant than *Mooreanus* and a good deal dearer to buy, even if you have the good fortune to track it down in some nursery catalogue. But this I will say—it is such a really first-class hardy

perennial, that it is well worth every penny that any nurseryman has the hardihood to ask for it, and once you possess a specimen, there should be no difficulty in increasing it to your heart's content. Even the great *A. orientalis* is said to be hardy in the milder parts of the country, and I have an idea that it is hardier than is generally supposed, if given a carefully chosen site, and perhaps a covering of ashes or bracken in winter.

There are quite a number of other South African plants which are perfectly hardy in this country, and at the same time easy to obtain, to propagate, and to grow, but which still qualify for the description "less common." The reason must be I think, that gardeners are apt to assume that South African plants just couldn't be hardy in Britain, and so funk trying them. It may be, too, that most of them have a slightly exotic, too-good-to-be-true look about them, so that folk dare not let themselves believe that they are hardy, and thus they never give them a trial. I have in my garden several extensive plantings of that splendid South African bulb *Nerine Bowdeni*, and its improved form 'Fenwick's variety.' Some are planted in the traditional way, at the foot of a south wall, and some in almost pure gravel at the foot of a west wall (Fig. 193). Every autumn they flower superbly, producing quantities of their fine heads of rose-pink Lily-like blossom, and every autumn produces a crop of of visitors who cannot believe that they are absolutely hardy, and never get winter protection of any kind. I grow, too, the rarer *N. Bowdeni* hybrid *N.* × 'Hera'—which has very much larger heads of finer blossoms of a rich cherry red—in exactly the same open-air conditions, and with the same happy results (Fig. 192). Not only this, but for several years now I have had both *Bowdeni* and 'Hera' growing and flowering in the open flower border, far from any wall, and with no winter coddling of any kind. Although bulbs of *N. Bowdeni* may cost three to four shillings each to buy, it is comforting to know that they increase at a most encouraging rate, so that with a start of two or three bulbs, or even a single bulb, one can, in the course of a few years, have a really good show of this supremely lovely thing. The best plan is to plant them, and leave them undisturbed for three years, and then lift, in early summer, divide, and replant.

Another most beautiful South African plant is what for many years was known as *Sparaxis pulcherrima*. Later its name was changed to *Dierama pulcherrimum* and I am not sure that it has not recently been rechristened something else. Let's play for safety and call it by its charming and descriptive old popular name 'Wand Flower.' But even its "popular" name has not made the 'Wand Flower' as popular as it deserves to be. It's the rarest thing to find it in gardens. The plant forms a tussock of narrow Iris-like leaves, and about mid-summer throws up a sheaf of slender, wiry, four- to five-foot stems, carrying at their summit chimes of big pendent bell-flowers, which sway and swing to every smallest wind, and yet are unharmed even by a gale, so tough are those wire-like wands. The normal colour of the flowers is crimson, but there are various pink varieties, and, I think, a white. Mature, ready-made specimens may be bought, and planted in spring, or seedlings may be raised and grown in small pots, to be housed in a cold frame or

greenhouse for their first winter, and then planted out in their permanent quarters in spring. They may take a year or two to flower, but once established they should be left well alone for ever and ever. One last suggestion about the 'Wand Flower.' It is such an exceptionally graceful plant in flower, that it is important that it should be given a position where it can display that grace without interference from other plants. Don't plant it at the back of the herbaceous border among a lot of gaudy things of its own height. Plant it rather at the very front of the border, where it can tower graciously above much dwarfer neighbours, or give it—a whole colony of it—a completely isolated position with a carefully chosen background (Fig. 197).

Oenothera glaber is a plant of which I am very fond, but I seldom seem to meet it in other folks' gardens. I wonder why. It may be that there are such vast numbers of splendid plants to choose from, that everyone cannot grow all of them. This being so, many fine things are bound to become diluted in their distribution. However it is, *O. glaber* is a hardy, easy, and most attractive dwarf herbaceous plant. As to whether its name really is *glaber* I would not like to swear, nor even whether it is still called an Oenothera. With the Evening Primroses—and the botanists, you never know! Anyway as *glaber* I have always known it, and for practical garden purposes I shall still call it *glaber*. The plant forms concise clumps of rounded, glossy leaves, stained with a tinge of beetroot red. It flowers in June and July with stems a foot high or a trifle more, carrying heads of blossom of a particularly rich deep gold, picked out with red on the calyces. Another useful and attractive Evening Primrose is *O. odorata*—and by the by *O. glaber* is *not* a true daylight-saving Evening Primrose. Its flowers remain wide open all day. *O. odorata* throws up a number of slender, unbranched three-foot stems, strung with big golden blossoms, which open in the evening and smell deliciously of cowslips. Next morning the petals fade to a curious tone of apricot, and close into a crumpled mass which contrasts pleasantly with the next crop of gold. There is a variety *O. odorata sulphurea*, with pale sulphur-yellow flowers. The plant is, I think, little more than a biennial, but once started in the border it seeds about and colonizes, coming up even in the gravel path. In spite of this, I have never found *O. odorata* a nuisance. Seedlings seldom seem to spring up in tactless places, but if and when they do, they are very easily liquidated.

Cephalaria tartarica is, in my opinion a truly magnificent plant. For those who don't know it I can best describe it as a giant Scabious, a six- to eight-footer, with large, Scabious-like flowers, of a curious and delicate tone of soft yellow. Perhaps the reason why one does not see it in gardens more often is that folk are afraid of it, and for this there is some justification. I was given a root of it a few years ago, which I planted in a mixed flower border. In its second season it had become too big for its fairly generous position, and was surrounded by an army of seedlings that truly were a menace. Not for worlds however would I be without this grand plant. Banishment to a part of the garden where it could play at giants—prolific giants—to its heart's content was the only thing. Digging out the massive clump that it had formed was a navvy's

job, a major operation. A place was found for it in rough grass, with a background of evergreens, and there it looks magnificent and can do no harm. But don't mistake me. Cephalaria is not one of those wicked weeds like the giant Polygonums, which plunge about underground, erupt all over the place, and are practically impossible to exterminate. It's a plant for a very big, wide herbaceous border, or for isolation, and as to seedlings, the hoe in spring should keep them in order. Incidentally *Cephalaria tartarica* is excellent as a cut flower. In June this year a big vase with long curved sprays of *Buddleia alternifolia* strung from end to end with their tufts of Lavender blossom, and with the big soft yellow Cephalaria standing up among them was a good sight in the house.

One last plant. *Verbena corymbosa*. This I collected in South Chile and introduced to cultivation in 1929. But please don't think that on that account I am prejudiced when I say that it is an absolutely first-class herbaceous plant. I first saw it from the train as we came into Valdivia. The country was rather flat and green, with many little streams and ditches, every one of which was margined with a haze of rich heliotrope. That was my first sight of *V. corymbosa*, and a plant that makes such a show when seen from the train, is worth investigation. It grew in those damp places to about three feet high, with wide corymbs of blossom, which looked extraordinarily like Heliotrope, and smelt like Heliotrope too, though the fragrance is not so heavy and heady. Fortunately I not only saw the plant in flower, but was able to secure seeds, which germinated well in England.

As a garden plant it has behaved well, and has proved reliably hardy. The only trouble in this connection has been that I have heard of young plants, planted too late in the summer perishing in a following hard winter. But once established after spring or early summer planting it will stand the coldest winter.

There are two patches of *Verbena corymbosa*, several feet across, in my garden, which have been there for four years. They have stood up to really severe winter weather without protection, and without damage, and each July and August they flower splendidly. The only thing in the way of climate that they resent is extreme drought, but a single can of water soon puts that right and tides them over until the next fall of rain. The plant prefers a loam that is fairly rich in humus. On a light, hungry soil it is worth digging in some manure, compost, leafmould or peat. *V. corymbosa* has received an Award of Merit, and was very well figured in the *Botanical Magazine*. It has, too, received a fair share of publicity in the horticultural Press. Yet it still remains one of the "less common herbaceous plants." Perhaps that is a good sign. Recognition which comes slowly but surely is usually better and safer than a burst of wild popularity in the first ten minutes. Many plants—but not all—which send the gardening public crazy at first sight are apt to end up by convincing the gardening public that they *did* lose their heads, and for the time being *were* slightly crazy.

PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1951

Cyclamen Rohlfsianum A.M. September 11, 1951. As the result of an introduction in 1947 by Mrs. Vida Howes a fine pan of this rare and interesting plant was exhibited.

The flowers appeared with the foliage and were on stems 3 inches high. Each petal was ¾ inch long, ½ inch wide, waved and coloured Rhodamine Pink (H.C.C. 527/2) above a dull crimson band at the base. This species differs chiefly from its congeners in that its large, yellow anthers protrude prominently outside the corolla. From specimens grown in this country considerable variation is to be found in the foliage. On the plant shown the leaves were angulated with about 9 projecting points and had a denticulate-crenate margin. On the upper surface the colour was dull green with a pale irregular band; beneath, a uniformed shade of Beetroot Purple (H.C.C. 830/1). Exhibited by Messrs. W. E. Th. Ingwersen Ltd., Gravetye, East Grinstead, Sussex (Fig. 199).

Shortia × intertexta* 'Wimborne' A.M. April 17, 1951. This is a lovely hybrid between *Shortia galacifolia* and *Shortia uniflora* var. *grandiflora*. The shining green foliage on long thin petioles stained with pink form an ideal setting for the pale pink flowers with frilled petals. It is a plant well suited for the woodland or for the shadier parts of the rock garden. Exhibited by Mr. W. J. Marchant, Keepers Hill, Stapehill, Wimborne, Dorset (Fig. 198).

* **Shortia × intertexta** Marchant, Sp. hybr. nov. (*S. galacifolia* Torr. et Gray × *S. uniflora* Maxim. var. *grandiflora*); inter parentes plus minusve intermedia; a *S. galacifolia* floribus majoribus, corollae lobis latioribus praecipue differt; a *S. uniflora* var. *grandiflora* bracteis bracteolisque angustioribus, pedicellis erectioribus saepe longioribusque, floribus minoribus distinguitur.

BOOK NOTES

"Cacti." By Prof. J. Borg. 8vo. 487 pp. Illus. Published by Blandford Press Ltd., 16 West Central Street, London, W.C.1. 42s.

Growers of Cacti who take a scientific interest in their plants have found the serious literature in short supply and difficult to acquire. The important monograph by Britton and Rose (1919–1923) was soon out of print and even the reprint published in 1931 now commands a high price. Moreover the monograph is entirely botanical and takes no note of the cultural side, so that Prof. Borg's *Cacti*, published in 1937, was warmly welcomed since it gave readable descriptions of all the species likely to be in cultivation, with particulars of their cultural requirements. The system of classification followed was that of Britton and Rose, with which was incorporated later work by other authors. Unfortunately this book also went out of print in a short time and, owing to the war, the publishers did not feel able to undertake a new edition.

Prof. Borg, who held the chair of Natural History at the Royal University of Malta and himself maintained a very fine collection of these plants, died in 1946, but he left the completed manuscript of a second edition, revised and enlarged. Mme Borg was most anxious that this should be published and the work was eventually undertaken by Blandford Press Ltd., and is now available. In the second edition of *Cacti* a further 312 species have been added, bringing the total number of species described to 1,500, and there are 36 additional illustrations. Such changes as have been made in the classification are designed to assist the reader in the light of the later work that has been done on the family Cactaceae; important genera, such as Opuntia, Cephalocereus, Lobivia and Rebutia, have been reclassified and new genera, such as Haageocereus, Spegazzinia and Chilenia, adopted but the author has taken a conservative view and

omitted some of the many new genera that have been proposed, often on rather doubtful grounds, though reference is made to them in the synonyms. In the spelling of the plant names the International Rules are now followed throughout and, where temperatures are mentioned in cultural directions, both the Centigrade and its Fahrenheit equivalent are given.

This book will be of the greatest assistance to growers of Cacti and its scientific accuracy will also commend it to botanists interested in these plants.

VERA HIGGINS.

"Guide to National Pinetum and Forest Plots at Bedgebury." Forestry Commission. Pp. 66. Illus. (H.M.S.O.) 2*s*. 6*d*.

The Pinetum at Bedgebury in Kent was established in 1925 under the joint auspices of the Royal Botanic Gardens, Kew, and the Forestry Commission. Up till 1948 it has been constantly under the skilled supervision of Mr. W. Dallimore, and he has written the description of the Pinetum for this guide. Bedgebury is obviously a site of considerable natural beauty, and efforts have been made to take advantage of the undulating ground and the lake. Although between 200 and 250 feet above sea-level the Pinetum appears to be unusually and rather surprisingly susceptible to frosts, particularly late spring and even summer frosts. During the fifteen years recorded, 4° ground frosts occurred 93 times in May, 14 times in June, once in July, 4 times in August and 15 times in September. The guide reports on the behaviour of numerous Conifers under these conditions over 25 years and so is a valuable record for gardeners and gives a good indication as to the species they may be able to establish satisfactorily. The records of growth in the trial forest plots of many less common trees are also of value. I have found this guide a most interesting paper which I can confidently recommend to Fellows of the Society whether they are able to visit the Pinetum or not. It is attractively produced.

P. M. SYNGE

"Flowering and Ornamental Shrubs." By Sidney Weaver. 240 pp. Illus. (Faber & Faber.) 16*s*.

The reader will soon discover that this book differs from any other on the subject. Mr. Weaver is to be congratulated on being downright in giving his personal views, which obviously are based on real knowledge of the growing and handling of plants.

The book is divided into ten chapters, and while the headings of these are generally orthodox, it is a pleasant surprise to see a chapter on "How to Buy Shrubs." The advice given in this is authoritative, coming as it does from one who has sold shrubs professionally.

Some criticism may be levelled at some of the names included in the lists of "Shrubs for all Purposes." Not everyone will agree with all the recommendations, but in the main the lists provide a very valuable quick reference.

The main body of the work is headed "Shrubs Considered Separately," and although Mr. Weaver clearly points out that his purpose is not to list all shrubs known to be cultivated in the British Isles, I consider he could, without detriment, have omitted some such as Aristolochia and Sinomenium, and included among others such desirable plants as *Cytisus Burkwoodii*, *Cydonia* 'Rowallane Seedling,' *Diervilla* 'Newport Red,' *Viburnum* × *bodnantense* and *Syringa josiflexa* var. 'Bellicent.' His lists of Azaleas and Rhododendrons are by no means up to date, not a word appears about the "occidentale hybrids" or the Exbury and Knap Hill strains of the former; while his most recent Rhododendron hybrid is 'Loder's White.'

Propagation is simply dealt with, and much useful information given on the control of the more troublesome pests and diseases.

Other chapters deal with "The Use of Shrubs, Planning, Planting, Maintenance and Ornamental Hedges."

There are 35 illustrations, but better examples of some plants, e.g. *Coronilla Emerus* and *Clematis* 'Nellie Moser,' could surely have been found; while, in my opinion, the photograph labelled *Cornus Nuttallii* opposite page 97 more closely resembles *C. Kousa*.

The nomenclature throughout the book requires checking. I noted 39 errors in spelling, and among these are "Stransvaesia" for Stranvaesia, "tetandra" for tetrandra, "nummulariodes" for nummularioides. These mistakes can easily be corrected when a new edition is printed. The omission altogether of the names of botanical authorities for the plant names would be an improvement; for instance, many who read on page 70 "*Amelanchier canadensis* Med" may be justifiably puzzled.

F. P. KNIGHT

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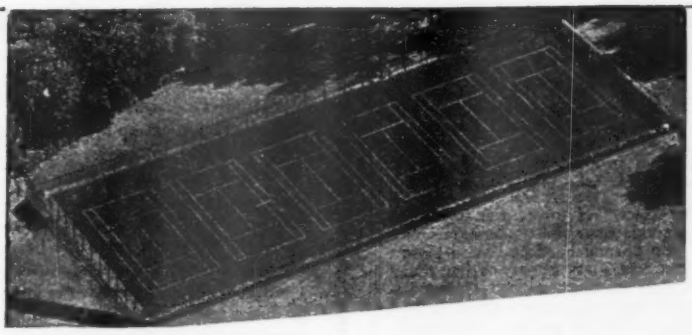

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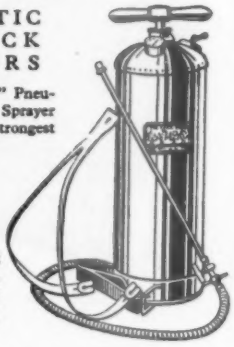

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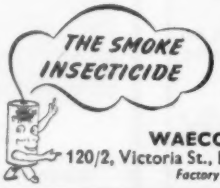

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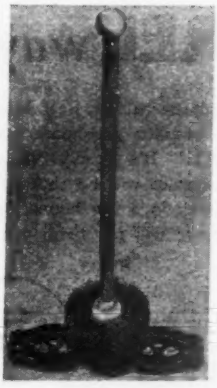

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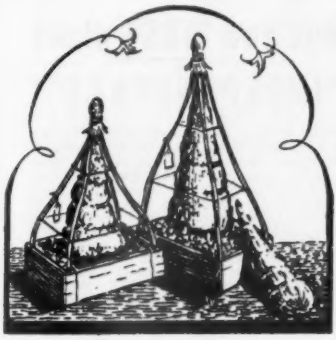

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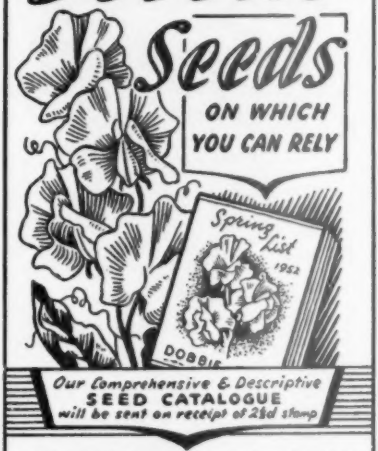

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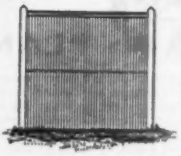

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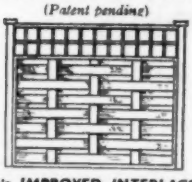

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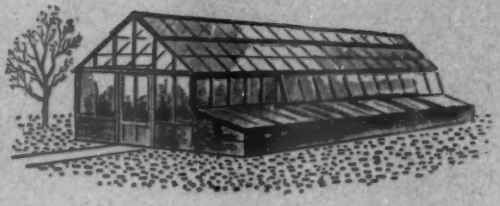

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